

# Zho Ragen, PhD

PHYSICAL OCEANOGRAPHY · CLIMATE DYNAMICS

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## Research Interests:

Large-scale ocean circulation. Climate dynamics. Energy transport and partitioning between the ocean and atmosphere. Atlantic Meridional Overturning Circulation. Surface evaporation. Southern Ocean circulation. Earth system modeling and idealized modeling. Climate impacts and climate justice. Disproportionate causes and impacts of climate change.

## Education

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### University of Washington

Seattle, WA

PHD PHYSICAL OCEANOGRAPHY

Sep 2017 - March 2024

- Advisor: Dr. Kyle Armour
- Supervisory Committee: Kyle Armour, LuAnne Thompson, Andrew Shao, Alison Gray, Jodi Young, Eric Steig
- Dissertation: On Coastlines and Climate: How Basin Geometry Shapes Ocean Circulation and Global Climate

### University of Washington

Seattle, WA

MS PHYSICAL OCEANOGRAPHY

Sep 2017 - Dec 2020

- Advisor: Dr. Kyle Armour

### The Johns Hopkins University

Baltimore, MD

BA GLOBAL ENVIRONMENTAL CHANGE AND SUSTAINABILITY / EARTH AND PLANETARY SCIENCES

Sep 2012 - May 2016

- Advisor: Anand Gnanadesikan
- Thesis: The Impact of Parameterized Lateral Mixing on the Antarctic Circumpolar Current

## Positions Held

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- 2024 **Professor**, Freedom Education Project Puget Sound
- 2024 **Facilitator and Instructor**, Climate Impacts Group, University of Washington
- 2017-2024 **Graduate Researcher**, School of Oceanography, University of Washington
- 2015-2016 **Undergraduate Research Assistant**, Department of Earth & Planetary Sciences, The Johns Hopkins University

## Publications

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### PUBLISHED

- Fajber, R., Donohoe, A., **Ragen, S.**, Armour, K. C., Kushner, P. J., (2023). Atmospheric Heat Transport is Governed by Meridional Gradients in Surface Evaporation in Modern Day Earth-like Climates. *Proceedings of the National Academy of Sciences*.
- Laguë, M. M., Quetin, G. R., **Ragen, S.**, Boos, W. R., (2023). Continental configuration controls the base-state water vapor greenhouse effect: lessons from half-land, half-water planets. *Climate Dynamics*.
- Roach, L. A., Blanchard-Wrigglesworth, E., **Ragen, S.**, Cheng, W., Armour, K. C., Bitz, C. M. (2022). The impact of winds on AMOC in a fully-coupled climate model. *Geophysical Research Letters*, e2022GL101203.
- Ragen, S.**, Armour, K. C., Thompson, L., Shao, A., Darr, D. (2022). The Role of Atlantic Basin Geometry in Meridional Overturning Circulation. *Journal of Physical Oceanography*, 52, 475-492.
- Laguë, M. M., Pietschnig, M., **Ragen, S.**, Smith, T. A., Battisti, D. S. (2020). Terrestrial evaporation and global climate: lessons from Northland, a planet with a hemispheric continent. *Journal of Climate*, 1-64.
- Ragen, S.**, Pradal, M. A., Gnanadesikan, A. (2020). The Impact of Parameterized Lateral Mixing on the Antarctic Circumpolar Current in a Coupled Climate Model. *Journal of Physical Oceanography*, 50(4), 965-982.

### IN PREP

- Ragen, Z.**, Fajber, R., Armour, K. C., Thompson, L., Oldenburg, D. Revisiting the Role of Ocean Basin Geometry in Atlantic Overturning: the Importance of the North Pacific Basin. Anticipated submission: Winter 2024

**Ragen, Z.**, Fajber, R., Donohoe, A., Armour, K.C. The Impact of Continental Geometries on Mean State Climate and Heat Transport. Anticipated submission: Winter 2024

## Teaching Experience

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2024 **Environmental Science 101**, Professor  
2024 **Environmental and Climate Justice**, Facilitator and Instructor  
2023 **OCN 102: The Changing Oceans**, Instructor of Record  
2024 **OCN 320: Coastal Oceanography**, Teaching and Lab Assistant  
2023 **OCN 102: The Changing Oceans**, Teaching Assistant  
2022 **OCN 285: Physics Across Oceanography: Fluid Mechanics And Waves**, Teaching Assistant  
2022 **OCN 286: Fluid Mechanics And Waves Laboratory**, Teaching Assistant  
2019 **OCN 423: Ocean Circulation And Climate**, Teaching Assistant  
2019 **ATMS 487: Fundamentals Of Climate Change**, Teaching Assistant

## Honors and Awards

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2024 **Research Grant**, Women's Institute for Solidarity and Empowerment  
2023 **DEI Award**, UW School of Oceanography  
2020 **Outstanding Student Presentation Award: Poster**, 23rd Conference on Atmospheric and Oceanic Fluid Dynamics  
2018 **Participant in Advanced Climate Dynamics Course in Finse, Norway**, ACDC  
2018 **Honorable Mention, Graduate Research Fellowship Program**, National Science Foundation  
2017 **Egtvedt Fellowship - Top Scholar Award**, UW School of Oceanography

## Presentations

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### INVITED TALKS

Spring 2023. *How to get an AMOC: the Importance of North Pacific Basin Extent*. Invited talk: UW Program on Climate Change Spring Welcome, Seattle, WA.  
Spring 2023. *Climate Imperialism Panel*. GEOG 335, UW Department of Geography, Seattle, WA.  
Fall 2021. *The Role of Ocean Basin Geometry in Atlantic Meridional Overturning Circulation*. Invited talk: Canadian Centre for Climate Modeling and Analysis, Victoria, BC, Canada.  
Fall 2021. *The Role of Ocean Basin Geometry in Atlantic Meridional Overturning Circulation*. California Institute of Technology, Pasadena, CA.  
Spring 2019. *Exploring the Ocean's Role in Climate Asymmetries*. Ocean Model Working Group Meeting, National Center for Atmospheric Research, Boulder, CO.

### OTHER SELECTED PRESENTATIONS

Feb 2024. *Dissertation Defense: On Coastlines and Climate: How Basin Geometry Shapes Ocean Circulation and Global Climate*, University of Washington, Seattle, WA.  
Spring 2022. *The Impact of Continental Geometries on Meridional Heat Transport and Climate*, Conference on Atmospheric and Oceanic Fluid Dynamics, Breckenridge, CO.  
Fall 2022. *Evaporation: the Critical Link in Coupling Atmosphere and Ocean Heat Transport*, AGU Fall Meeting, Chicago, IL.  
Winter 2021. *Enhancing Climate Education Through Teacher Professional Development*, AGU Fall Meeting.  
Winter 2021. *The Impact of Atlantic Basin Geometry on Meridional Overturning Circulation*, AGU Fall Meeting.  
Winter 2020. *How does coastline shape influence meridional overturning and ocean heat transport?*, Ocean Sciences Meeting, San Diego, CA.  
Spring 2019. *What is Climate Change?*, Climate Science on Tap, Seattle, WA.  
Spring 2019. *Ocean Circulation on Aquaplanets*, Advanced Climate Dynamics Course Reunion Conference, Rondane, Norway.

Spring 2016. *The Impact of Parameterized Lateral Mixing on the Antarctic Circumpolar Current*, Ocean Sciences Meeting, New Orleans, LA (poster).

## Outreach & Professional Development

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### SERVICE AND ACTIVITIES

2020-2024 **UAW Local 4121**, Department Steward  
2022-2024 **Women's Institute for Solidarity and Empowerment**, Volunteer Researcher  
2021-2023 **Graduate Application Mentor Program**, Mentor  
2020-2022 **Diversity Equity and Inclusion Committee**, UW School of Oceanography  
2022 **R/V Thomas G. Thompson Captain Hiring Committee**,  
2020-2021 **14th Graduate Climate Conference Planning Committee**, Co-Chair  
2020-2021 **Director's Advisory Committee**, UW School of Oceanography  
2018-2020 **Program on Climate Change, UW**, Graduate Student Representative  
2018-2020 **Climate Science on Tap: Schooner Series, Cascadia Climate Action**, Organizer  
2019-2024 **The Touch Tank**, graduate student quarterly publication, Staff Writer

### DEVELOPMENT

**Environmental Science Class and Lab**, Professor, *Washington Corrections Center For Women*

**Science Justice Summer School**, Developer and Facilitator, *University of Washington Climate Impacts Group*

**2021 CESM Workshop**, Participant, *University Corporation for Atmospheric Research*

**Physics of a Changing Climate: Energy Conservation and Transfer**, Developer and Facilitator, *Northwest Educational Service District 189*

### PEER REVIEW

Journal of Climate